

PTO/SB/21 (08-03)

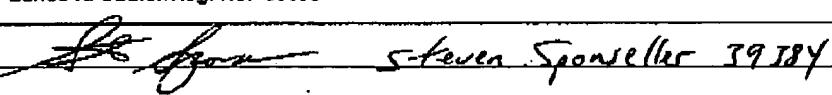
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TRANSMITTAL FORM <small>(to be used for all correspondence after initial filing)</small>		Application Number	09/451,258	
		Filing Date	11/29/1999	RECEIVED
		First Named Inventor	Steven R. Hollasch	CENTRAL FAX CENTER
		Group Art Unit	2672	AUG 08 2005
		Examiner Name	JAVID A AMINI	
Total Number of Pages in This Submission	19	Attorney Docket Number	MS1.0448US	
ENCLOSURES (check all that apply)				
<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Documents <input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53		<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s)	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input checked="" type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): <i>Reply Brief (17 pages)</i>	
Remarks				

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual Name	Lance R. Sadler/Reg. No. 38605	
Signature		
Date	August 8, 2005	

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PTO/SB/17 (12-04)

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Effective on 12/08/2004. <i>Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).</i>		Complete if Known	
FEE TRANSMITTAL For FY 2005		Application Number	09/451,256
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		Filing Date	11/29/1999
TOTAL AMOUNT OF PAYMENT (\$)		First Named Inventor	Steven R. Hollasch
(\$)		Examiner Name	JAVID A AMINI
0		Art Unit	2672
Attorney Docket No.		MS1 0448US	

METHOD OF PAYMENT (check all that apply)

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<input checked="" type="checkbox"/> Deposit Account Deposit Account Number: 12-0769 Deposit Account Name: Lee & Hayes, PLLC				
For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)				
<input checked="" type="checkbox"/> Charge fee(s) indicated below		<input type="checkbox"/> Charge fee(s) indicated below, except for the filing fee		
<input checked="" type="checkbox"/> Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17		<input checked="" type="checkbox"/> Credit any overpayments		

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FEE CALCULATION**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

<u>Application Type</u>	<u>FILING FEES</u>		<u>SEARCH FEES</u>		<u>EXAMINATION FEES</u>		<u>Fees Paid (\$)</u>
	<u>Fee (\$)</u>	<u>Small Entity</u>	<u>Fee (\$)</u>	<u>Small Entity</u>	<u>Fee (\$)</u>	<u>Small Entity</u>	
Utility	300	150	500	250	200	100	_____
Design	200	100	100	50	130	65	_____
Plant	200	100	300	150	160	80	_____
Reissue	300	150	500	250	600	300	_____
Provisional	200	100	0	0	0	0	_____

2. EXCESS CLAIM FEES

<u>Fee Description</u>	<u>Small Entity</u>
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50 25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200 100
Multiple dependent claims	360 180
<u>Total Claims</u>	<u>Extra Claims</u> <u>Fee (\$)</u> <u>Fee Paid (\$)</u>
- 20 or HP =	x 50 = _____
HP = highest number of total claims paid for, if greater than 20	
<u>Indep. Claims</u>	<u>Extra Claims</u> <u>Fee (\$)</u> <u>Fee Paid (\$)</u>
- 3 or HP =	x 200 = _____
HP = highest number of independent claims paid for, if greater than 3	

3. APPLICATION SIZE FEE

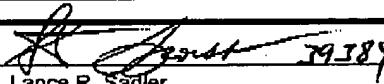
If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

<u>Total Sheets</u>	<u>Extra Sheets</u>	<u>Number of each additional 50 or fraction thereof</u>	<u>Fee (\$)</u>	<u>Fee Paid (\$)</u>
- 100 -	/ 50 =	(round up to a whole number) x _____	=	<u>Fee Paid (\$)</u>

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other: _____

SUBMITTED BY			
Signature	 79384		Registration No. 38605 (Attorney/Agent)
Name (Print/Type)	Telephone (509) 324-9256 Date 8-8-05		

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Serial No. 09/451,256
Filing Date November 29, 1999
Inventor..... Hollasch
Group Art Unit..... 2672
Examiner Amini, Javid A
Attorney's Docket No. MS1-448US
Confirmation No. 8802
Title: "Computer Graphics Methods and Apparatus for Ray Intersection"

REPLY BRIEF

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AUG 08 2005

In response to Examiner's Answer mailed June 9, 2005, in connection with Applicant's Appeal Brief filed December 16, 2004, a Reply Brief is submitted. Favorable consideration is respectfully requested.

Claims 1-22, 24-33, and 35-56 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,249,287 to Yamrom.

Claims 23 and 34 stand rejected under 35 U.S.C. § 112, first paragraph, as being based on a disclosure which is not enabling.

Applicant respectfully submits that the standard for anticipation under 35 U.S.C. §102 is not satisfied by Yamrom with respect to claims 1-22, 24-33, and 35-56. Furthermore, when claims 23 and 34 are considered in light of the Specification, Applicant respectfully submits that these claims are enabled. Accordingly, Applicant disagrees with the Office's final rejection (from which an appeal has been made) and with the Examiner's Answer, to which this Reply responds.

Discussion of Yamrom -- Pages 14-16 of Applicant's Appeal Brief

On pages 14-16 of its Appeal Brief, filed December 16, 2004, Applicant discusses the Yamrom reference. In the Examiner's Answer, mailed June 9, 2005, the Office specifically addresses page 14, lines 11-12, of Applicant's brief and compares it to page 11, lines 8-11 of Applicant's Specification. In this regard, the Office argues that it discloses "a plane of the subject matter can be represented with 2 or 3 dimensional, see the equations in line 10 and line 19 on the same page in the specification." The Office then comments: "[c]onceptually, the 3-D object (it may contain a plurality of planes similar to fig. 3 of the specification) defines a volume in which the approximation must lie. Therefore, the 3-D object is considered a close surface."

Applicant respectfully submits that it is puzzled by the Office's reasoning and fails to understand how the Office's argument is pertinent to the rejection of Applicant's claims. Nevertheless, Applicant maintains that it has accurately characterized the Yamrom reference.

The Office also specifically addresses page 14, lines 18-23, of Applicant's brief and compares it to page 9, lines 10-17 of Applicant's Specification. The Office then appears to argue that this excerpt from Applicant's Specification teaches a similar approach to Yamrom, as discussed in the Applicant's Appeal Brief. However, the Office offers no guidance or reasoning in this regard other than merely reciting the excerpt from page 9 of Applicant's Specification.

Applicant respectfully submits that it is puzzled by the Office's reasoning and fails to understand how the Office's argument is pertinent to the rejection of Applicant's claims. Specifically, Applicant fails to see how the illustrated and described pre-characterization processing described in its application is similar to fitting a reduced mesh to the surface of an object, as disclosed in Yamrom. Furthermore, it is unclear how this relates to the Office's rejection of claims 1-22, 24-33, and 35-56.

Claim 1

Claim 1 recites a method for determining which shapes are intersected by a ray in a computer graphic processing system in which a ray is cast toward an object represented by a collection of pre-determined shapes each characterized by characteristic data. The method recites:

- defining a reference object relative to the represented object;

- determining the positions of the shapes relative to the reference object using the characteristic data; and
- determining, on the basis of the positions of the shapes relative to the reference object, *those shapes that have no chance of intersecting the ray, and those remaining shapes that may intersect the ray.*

In making out the rejection of this claim, the Office argues that its subject matter is anticipated by Yamrom. In making out the rejection, the Office makes a number of interpretations with respect to Applicant's claim terminology and Yamrom's disclosure. Applicant has tried to follow the Office's interpretation of Yamrom and its application to the claimed subject matter, but cannot follow the logic that the Office uses. To the extent that Applicant understands the Office's interpretation of Yamrom, Applicant disagrees with the Office's interpretation and application of this reference.

In its Appeal Brief, filed December 16, 2004, Applicant submits that claim 1 recites subject matter that is neither anticipated by nor rendered obvious in view of Yamrom. Applicant explained that Yamrom's methodology does not determine shapes that have no chance of intersecting the ray and remaining shapes that may intersect the ray. Accordingly, Applicant submits that the Office's rejection of this claim does not meet the required standard, as stated in MPEP §2131: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

In the Examiner's Answer, mailed June 9, 2005, the Office maintains its rejection and further argues: "[t]he verb "may" is a broad term, and it does not mean possible, but it means permissible." The Office then notes step 14 in Fig. 3

of Yamrom, labeled “DOES RAY INTERSECT SURFACE OF OBJECT?”. The Office then simply states: “[n]ow comparing it with the claim language as ‘no chance of intersecting the ray, and those remaining shapes that may intersect the ray.’” To the extent that Applicant understands the Office’s interpretation of Yamrom, Applicant disagrees with the Office’s argument.

First, Applicant notes that the Office’s reasoning neglects to even address “determining, on the basis of the positions of the shapes relative to the reference object, *those shapes that have no chance of intersecting the ray*”, as claimed. Furthermore, Applicant submits that the Office’s characterization of the term “may” is misplaced and out of context. In this regard, the Office impermissibly seeks to impart its own definition to the term “may” by stating “...it does not mean possible, but it does mean permissible.” Applicant is puzzled by this assertion, especially in light of the fact that dictionaries impart several definitions to “may”. What’s more, one of these definitions is “to indicate a certain measure of likelihood or possibility”. (see, e.g. Webster’s II New Riverside University Dictionary). The Office’s capricious definition appears even more questionable in light of the MPEP’s own guidance. Specifically, Applicant calls the Office’s attention to Section 2111.01 II of the MPEP, which is reproduced in pertinent part below [emphasis added]:

It is the use of the words in the context of the written description and customarily by those skilled in the relevant art that accurately reflects both the "ordinary" and the "customary" meaning of the terms in the claims. Ferguson Beauregard/Logic Controls v. Mega Systems, 350 F.3d 1327, 1338, 69 USPQ2d 1001, 1009 (Fed. Cir. 2003) (Dictionary definitions were used to determine the ordinary and customary meaning of the words "normal" and "predetermine"

to those skilled in the art. *In construing claim terms, the general meanings gleaned from reference sources, such as dictionaries, must always be compared against the use of the terms in context, and the intrinsic record must always be consulted to identify which of the different possible dictionary meanings is most consistent with the use of the words by the inventor.):*

If extrinsic reference sources, such as dictionaries, evidence more than one definition for the term, the intrinsic record must be consulted to identify which of the different possible definitions is most consistent with applicant's use of the terms. *Brookhill-Wilk 1, 334 F. 3d at 1300, 67 USPQ2d at 1137; see also Renishaw PLC v. Marposs Societa" per Azioni, 158 F.3d 1243, 1250, 48 USPQ2d 1117, 1122 (Fed. Cir. 1998) ("Where there are several common meanings for a claim term, the patent disclosure serves to point away from the improper meanings and toward the proper meanings.").*

With the above guidance in mind, Applicant now calls the Office's attention to page 13, lines 15-21, of the Specification (one example of subject matter embodying the spirit of this claim) and the language of claim 1 itself; both of which clearly show "possible" as being consistent with the Applicant's use of the term "may" and "permissible" as being inconsistent and discordant therewith. Page 13, lines 15-21, of the Specification and the pertinent language of claim 1 are reproduced respectively below:

With the pre-characterization processing having been done as described above, step 214 uses the characteristic data to ascertain the position of a shape relative to the reference object. *This step determines whether or not a particular individual shape has a chance of being intersected by the ray.* In this manner, a sub-set of shapes that *might* be intersected by the ray is defined by determining which of the shapes satisfies a predefined relationship relative to the reference object, i.e. plane.

determining, on the basis of the positions of the shapes relative to the reference object, *those shapes that have no chance of intersecting the ray*, and *those remaining shapes that may intersect the ray*.

As is readily apparent from even a cursory inspection of the Specification and this claim, the Office's interpretation of "may" as *exclusively* meaning "permissible" is clearly out of context with respect to the specification and the claim language itself. Thus, the Office has improperly imparted its own definition to the term "may". Accordingly, the Office's reasoning, which is based upon this inconsistent and discordant definition, is misplaced.

Perhaps more importantly, regardless of which meaning is imparted to the term "may", Yamrom's methodology still does not anticipate the subject matter of this claim. Rather, as Applicant explains in its Appeal Brief, Yamrom determines whether its ray intersects an object's surface 36 (Fig. 4). If it does, then a point on its reduced mesh is adjusted in response to the intersection point. If the ray does not intersect the object's surface 36, then the point on the reduced mesh is adjusted a reference distance. Yamrom's method then moves on to other points on other shapes of the reduced mesh and presumably other rays that are cast through points of interest relative to the reduced mesh.

Nowhere does Yamrom, in casting its ray through a point of interest 32 on a polygon 35 of the reduced mesh to intersect a surface of an object, determine any shapes that "have no chance of intersecting the ray, and those remaining shapes that may intersect the ray." Rather, the analysis that Yamrom performs responsive to its cast ray is that which is concerned only with the point of intersection 38, if one exists. There is no analysis or concern for shapes that have no chance of intersecting the ray, and those remaining shapes that may intersect the ray.

As there is not even a mention in Yamrom of "determining, on the basis of the positions of the shapes relative to the reference object, those shapes that have *no chance* of intersecting the ray, and those remaining shapes that *may* intersect the ray", Applicant respectfully submits that the standard for anticipation under 35 U.S.C. §102 is not satisfied by Yamrom with respect to claim 1. Accordingly, this claim is allowable.

Page 17 of Applicant's Appeal Brief

On page 17 of its Appeal Brief, filed December 16, 2004, Applicant states: "Nowhere does Yamrom, in casting its ray through a point of interest 32 on a polygon 35 of the reduced mesh to intersect a surface of a complex object, ascertain any shapes that 'have no chance of intersecting the ray, and those remaining shapes that may intersect the ray.'"

In the Examiner's Answer, mailed June 9, 2005, the Office specifically addresses this excerpt and indicates that the term "complex object" is not specified in claim 1's language.

Applicant respectfully submits that the Office's answer fails to address the substantive argument that the Applicant makes. Specifically, regardless of whether "complex" is used in describing Yamrom, the fact remains that Yamrom does not, in casting its ray through a point of interest 32 on a polygon 35 of the reduced mesh to intersect a surface of an object, determine any shapes that 'have no chance of intersecting the ray, and those remaining shapes that may intersect the ray.'"

Page 19 of Applicant's Appeal Brief

On page 19 of its Appeal Brief, filed December 16, 2004, Applicant states: "MPEP §2131 states that, 'A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference,' *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Applicant respectfully submits that the rejection of claim 1 does not meet this standard."

In the Examiner's Answer, mailed June 9, 2005, the Office specifically addresses this excerpt and replies by citing a subsequent portion of MPEP 2131 which states: "When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art." The Office then inexplicably concludes: "[t]herefore Yamrom satisfies the standard for anticipation under 35 U.S.C. 102 with respect to claim 1's language."

Applicant respectfully submits that the Office's answer merely recites a portion of the MPEP without providing any explanation or reasoning as to how it is pertinent to claim 1 or how it supports the Office's stated conclusion. Thus, the Office's stated conclusion is unfounded and without support. In this regard, Applicant submits that the Office's rejection fails to satisfy the standard under 35 U.S.C. 102 because each and every element, as set forth in claim 1, is not found in the Yamrom reference.

Claim 2

Claim 2 depends from claim 1 and further recites “using a predetermined algorithm to determine which one of those remaining shapes intersects the ray.” In making out the rejection of this claim, the Office argues that Yamrom anticipates its subject matter in column 7, lines 6-35 which, as argued by the Office, illustrates a cylindrical projection algorithm. Applicant respectfully disagrees and submits that this claim is not anticipated by Yamrom.

In its Appeal Brief, filed December 16, 2004, Applicant submits that Yamrom neither discloses nor suggests a methodology that determines “those remaining shapes that may intersect the ray” as recited in claim 1. Given this, Yamrom cannot possibly disclose using a predetermined algorithm to determine which of those “remaining shapes” intersects the ray. Accordingly, for at least this reason, this claim is allowable.

In the Examiner’s Answer, mailed June 9, 2005, the Office Argues that “predetermined algorithm” is broad language and then states that the meaning of algorithm is synonymous with “logic” and means “a set of ordered steps for solving a problem, such as a mathematical formula or the instructions in a program.” The Office then refers to column 3, lines 23-67 and column 4, lines 1-67, of Yamrom and states that these excerpts disclose a predetermined algorithm (calling special attention to column 4, lines 3-22, the instruction in a program). Finally, in an apparent effort to explain how Yamrom’s “instruction in a program” anticipates claim 2 as a whole, the Office comments: “Applicant does not explicitly specify the type of algorithm in the claim language.”

Applicant respectfully but strongly disagrees with the Office's reasoning. First, the Office seems to have forgotten that this claim, as a dependent claim, incorporates the subject matter of claim 1 by reference (see 35 U.S.C. 112, paragraph 4). In this regard, the Office's reasoning fails to address the fact that Yamrom neither discloses nor suggests a methodology that determines "those remaining shapes that may intersect the ray" as recited in claim 1. Given this, Yamrom cannot possibly disclose using a predetermined algorithm to determine which of those "remaining shapes" intersects the ray. Accordingly, for at least this reason, this claim is allowable.

Furthermore, the Office has impermissibly treated the recitation "predetermined algorithm" as a discreet element and evaluated this language in isolation – without considering the claim as a whole (including, as discussed above, that it is dependent on claim 1). Applicant reminds the Office that: "Office personnel may not dissect a claimed invention into discrete elements and then evaluate the elements in isolation. Instead, the claim as a whole must be considered." (MPEP 2106(II)(C)). When considering the claim as a whole, it becomes clear that the predetermined algorithm is used "to determine which one of those remaining shapes intersects the ray." Accordingly, and as discussed above, Yamrom cannot possibly disclose the subject matter of this claim.

Claims 3-15

On page 4 of the Examiner's Answer, mailed June 9, 2005, the Office states: "Applicant on pages 20-29 regarding claims 3-15 argues similar to the previous arguments."

Applicant is puzzled by the Office's statement because Applicant's arguments on pages 24-29 are distinct from its arguments regarding claims 1 and claims 2. Applicant refers the Office to pages 24-29 of its Appeal Brief in this regard. Therefore, the Office does not appear to have replied to Applicant's arguments regarding claims 9-15. Applicant maintains its position with regard to these claims.

Claims 16-22, 24-33, and 35-56

On page 4 of the Examiner's Answer, mailed June 9, 2005, the Office states: "Applicant on pages 31-53 regarding claims 16-22, 24-33, and 35-56 argues similar to the previous arguments."

Applicant is puzzled by the Office's statement because Applicant's arguments on pages 31-53 are distinct from its arguments regarding claims 1 and claims 2. Therefore, the Office does not appear to have replied to Applicant's arguments regarding these claims. Applicant maintains its position with regard to these claims.

Page 45 of Applicant's Appeal Brief

On page 45 of its Appeal Brief, filed December 16, 2004, Applicant states: "Applicant has reviewed Figs. 4 and 5 and can not find even a single plane, let alone multiple planes as contemplated in this claim." Applicant then refers to column 1, lines 50-52, of Yamrom and states: [t]his excerpt makes no mention whatsoever of a plane." The Applicant also states: "notwithstanding the Office's

articulation of this rejection, Applicant has reviewed this reference in detail and can find no disclosure or suggestion of this claim's subject matter."

In the Examiner's Answer, mailed June 9, 2005, the Office states: "Applicant, on page 45 regarding, claim 39 argues that the reference Yamrom does not teach even a single plane". The Office then indicates that column 6, lines 22-67, of Yamrom "teaches (x,y) plane."

Applicant is puzzled by the Office's assertion that "Applicant, on page 45 regarding, claim 39 "argues that the reference Yamrom does not teach even a single plane". Applicant respectfully submits that it makes no such statement on page 45, as the Office argues. Applicant further submits that the excerpt cited by the Office, on column 6 of Yamrom, merely discusses an exemplary profile array and does not disclose or suggest the subject matter of claim 39. In this regard, the Office has not even attempted to explain how this excerpt is pertinent to the subject matter of this claim, as required by MPEP 707.05 ("When such prior art is cited, its pertinence should be explained").

Applicant maintains its position with respect to the Office's mischaracterization of Yamrom.

Claims 23 and 34

In the Examiner's Answer, mailed June 9, 2005, the Office acknowledges that the Applicant argues that claims 23 and 34 are enabled. The Office then addresses a question, in this regard, that the Office posed on page 13 of the Final Office Action (mailed August 6, 2004) and that it repeats on page 15 of the

Examiner's Answer: "How does the approximation of an object detect with only one polygon?" The Examiner's reply is reproduced below:

Examiner's reply: regarding the question on page 54 lines 1-2, and claims claim two or more polygons or triangles. In figs. 3-12 of the specification that each figure illustrates more than two polygons (triangles) and they share at least a vertex. For example: a vertex v3 in fig. 3 has been shared between polygon (triangle) 304 and 302. Therefore, the examiner strongly disagrees with the claim language in claims 23 and 34.

Applicant notes that the Office appears to have answered its own question in the first sentence of its above reply. Furthermore, Applicant submits that the language found in claims 16 and 27 recite "defining a collection of polygons" and "defining a plurality of triangles" respectively. In this regard, the Office appears to be concerned that Figs. 3-12 of the Specification illustrate more than two polygons and that they share at least a vertex. The Office states that it strongly disagrees with the language in claims 23 and 34, a sentiment that it expresses on page 15 of the Examiner's Answer by stating: "the claims languages are not following the specification languages."

Applicant has considered the Office's arguments but still does not understand the Office's confusion or the Office's articulation of this rejection. In its Appeal Brief, Applicant explains that throughout the specification, various embodiments are discussed in terms of polygons and collections of polygons. The specification states that triangles constitute an example of such polygons. As an

example, Applicant asks the Office to consider page 10, lines 1-9 set forth below [emphasis added]:

As shown, a collection of shapes is first defined to approximate an object in connection with a computer graphics program. In this example, the surface of the object is approximated by a collection of shapes. Fig. 3 shows an exemplary portion of such a collection generally at 300. Any suitable shapes can be used. In the described embodiment, the shapes have a similar geometry. *Typically, polygons having a plurality of vertices are used.* As will become apparent below, it is advantageous to select polygons that collectively have more faces than vertices when approximating the surface of an object. *In the illustrated example, the polygons comprise triangles.*

As this excerpt demonstrates, the specification clearly introduces the notion of using polygons to approximate an object, and then introduces the notion that one example of such a polygon is a triangle. Thus, the claim language indeed follows the language of the specification.

In its Appeal Brief, Applicant refers to the enablement and written description requirements set forth in the patent statute at 35 U.S.C. § 112 ¶ 1, regarding “undue experimentation.” *Plant Genetic Systems v. DeKalb Genetics Corp.*, 315 F.3d 1335, 1339 (Fed. Cir. 2003). In this regard, Applicant discusses the factors that the Federal Circuit set forth for a court to consider in determining whether a disclosure would require “undue experimentation”. Applicant then asks the Office to consider page 10, lines 10-22, of the Specification, which is reproduced again, below [emphasis added]:

As shown in Fig. 3, there are four depicted triangles, 302, 304, 306, and 308 having the vertices V1-V7 as indicated. There can be many thousands of triangles used to approximate the surface of an object. Additionally, the collection of triangles can be arranged to have different

topologies. Exemplary topologies are shown in Figs. 4-6. Specifically, Fig. 4 shows a topology known as a triangle mesh; Fig. 5 shows a topology known as a triangle strip; and Fig. 6 shows a topology known as a triangle fan. The collection of triangles can be arranged so that some of them share a side and/or vertices. For example, in Fig. 3, triangles 302 and 304 share a vertex, while triangles 304 and 306 share a side and two vertices. *Other collections can be defined where none of the triangles share a vertex.* Although triangles are depicted in the illustrated and described embodiment, it is to be understood that other shapes or polygons can be used to approximate an object.

The Specification then goes on to instruct from page 10, line 23 through page 15, line 17 how one embodiment's methodology operates.

Applicant again respectfully reminds the Office that the language employed in a claim must always be analyzed in light of the specification. *In re Mayhew*, 527 F.2d 1229 (CCPA 1976). As discussed and illustrated above, when claims 23 and 34 are considered in light of the Specification, it is clear that they are enabled.

Page 56 of Applicant's Appeal Brief

On page 56 of its Appeal Brief, filed December 16, 2004, Applicant states: "Applicant simply does not understand why the Office does not understand that the claim language is indeed following the language of the specification."

In the Examiner's Answer, mailed June 9, 2005, the Office specifically addresses this excerpt and states: "Applicant on page 56, second paragraph discloses that the examiner does not understand the claim language is following the language specification." The Office then strongly disagrees with applicant's argument and states: "Examiner believes that Applicant uses incorrect language 'none of the triangles share any vertices'". The Office also expresses a belief that the Applicant meant to use the terms "vertex removal" and "edge collapse" instead

of the claim language "none of the triangles share any vertices". The Office then encourages the Applicant to refer to publications provided by the Office.

Applicant has generally addressed this issue and, at this point, has nothing additional that it can add.

Conclusion

Applicant respectfully submits that all of the Office's rejections have been traversed. As such, Applicant respectfully submits that all of the claims are in condition for allowance.

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Respectfully Submitted,

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